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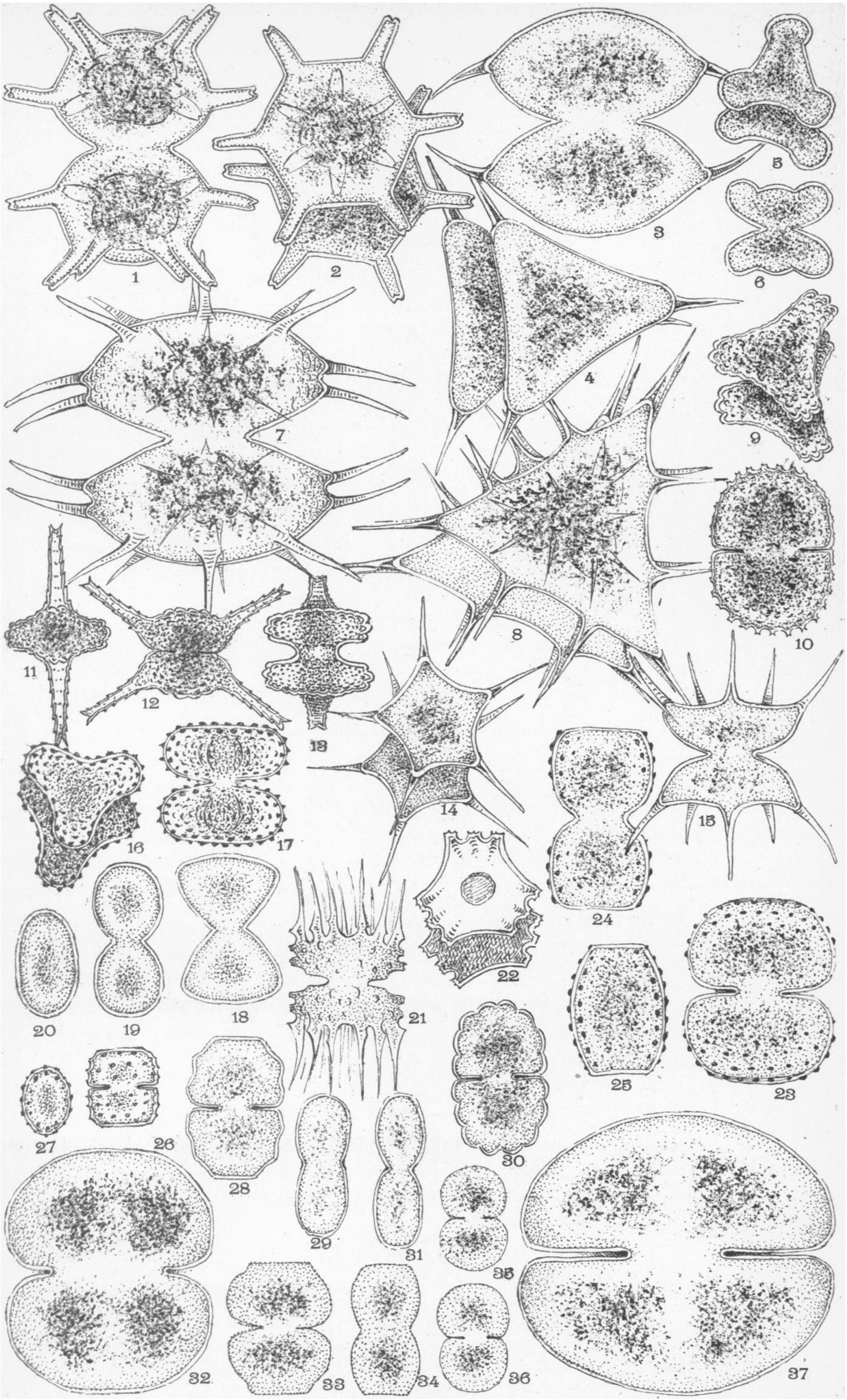

NEW DESMIDS OF THE UNITED STATES.

BULLETIN

OF THE

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Fresh-Water Algæ. IX.

By Francis Wolle.

(Plate XLVII.)

The opinion expressed in the preface to my Desmids of the United States, that the field for the study of our fresh-water algæ has not by any means been exhausted, receives confirmation in the additions made during the summer of 1884 to our already respectable collection of new species and varieties. The following list comprises the names and descriptions of nearly fifty species and varieties new to the flora of the United States. They were gathered, some from the apparently inexhaustible ponds of New Jersey, some by the Rev. H. D. Kitchell in Florida, others in the neighborhood of Minneapolis by Miss E. Butler, and a few from ponds of Pennsylvania. The plate which accompanies this article illustrates the species and varieties herewith described, and this, with four others, all of them colored, will form part of an appendix, or of a second volume of my work on the Desmids of the U. S., according to the quantity of material available at the time of publication.

DESMIDIACEÆ.

Hyalotheca dissiliens, var. HIANS, *n. var.*—Cells one-half to as long as wide; closely conjoined, sides more or less arched, with a distinct central notch. Diameter 25–50μ.

The large forms from Budd's Lake, N. J., the small from Maitland and other localities, Florida.

It is very nearly allied to a New Zealand species described by Nordstedt (*H. hians*). Some specimens from Florida present the appearance of undeveloped *Desmidium quadratum* and may be related thereto; the larger New Jersey forms, however, give no evidence of a thickening border or of a twist. End view circular.

Sphærozosma pulchellum, Archer, var. *bambusinoides*, Wittr.

Florida, Minn. and New Jersey ponds.

Penium (*Cylindrocystis*) *tumidum*, F. Gay.—Frequent in Toevi marshes, Florida.

Closterium juncidum, Ralfs, forma *gracillima lævissima*, Bréb.—Frequent in pond near Maitland, Florida.

C. lanceolatum, Kg.—I received last summer hundreds of specimens of this species in a gathering made by Prof. F. W. Cragin, Kansas. Diameter 40–50μ. Length 225–300μ

C. didymotocum, Corda.—A large form and distinct variety corresponding to description by Delponte. Cytioderm not longitudinally striate, but smooth and apices obtusely rounded. Diameter 50–60μ.

Minnesota and New Jersey.

C. ensis, Delp.—Occasionally in Minnesota, Pennsylvania and New Jersey ponds.

C. prelongum (Bréb.) Delp.—Luzerne Co., Penn., and Minnesota.

C. Brebissonii, Delp.—Similar in form to *C. prelongum*, but not striate or recurved at the ends.

Minnesota.

C. subcostatum, Nord.—Florida Ponds.

C. Delpontii, Krebs.—Delponte called this *C. crassum*, a name already applied to a species described by Rabenhorst; it was therefore changed as here given.

Frequent in Luzerne Co., Penn.

C. pronum, Bréb.—Differs from allied forms in its small size and proportionate length of body with the beak.

Florida ponds.

Docidium Archeri, Delp.—Luzerne Co., Penna.

D. rectum, Delp.—According to Delponte this species is separated from *D. Baculum* by being always straight, never bent, without a basal inflation, stouter and longer. I have frequently met with it, but am not yet satisfied that it is different from *D. Baculum*.

D. Woodii (Delp.) Wolle.—Cell cylindrical, six to ten times longer than broad; apices rounded, basal inflation of semi-cell large, wide and high; cytioderm smooth. Diameter at ends, 50μ; inflated base 65μ; length about 600μ.

Ocean Co., New Jersey.

Cosmarium Nordstedtii, Delp. (Plate XLVII. Figs. 23 and 25.) I adopt this name for a form widely distributed, but variable. Sometimes it resembles *C. triplicatum* in size and shape, but differs in the number and arrangement of the granules, which are not in series of threes but in continuous concentric rows. Sometimes they cover the upper half of the semi-cell, then again only one or two rows occur within, but near, the margin; the centre and basal half are usually nude. The semi-cells are not so straight-sided as figured by Delponte, but the front and end views are always more or less rectangular-oblong.

Reinsch has called a very different form by this name; it is nearly if not entirely identical with *C. cyclicum*, Lund.

C. sphalerostichum, Nord. (Figs. 26 and 27).—New Jersey and Pennsylvania. Resembles *C. orthostichum*, Lund., but is somewhat smaller; ends truncate and granules not so regularly arranged.

C. LOBATULUM, *n. sp.* (Figs. 33 and 34).—Small, one-third longer than wide, end of semi-cell broadly truncate; sides convex, with slight contraction near the end; side view circular with end truncate. Membrane finely and closely granular. Diameter 25μ; length 33μ.

Stillwater, Minnesota.

C. circulare, Reinsch. (Fig. 37)—Toevi marshes, Florida.

C. perforatum, Lund. (Fig. 32).—Near Minneapolis, Minn.

C. INFLATUM, *n. sp.* (Figs. 18–20).—Cell one-half longer than broad; semi-cell gradually enlarged from a narrow base to the broadly dilated end; end view broadly elliptic; lateral view circular, with slightly flattened sides; membrane finely punctate or smooth. Diameter 25–28μ; length about 40μ.

Ponds in Minnesota. *G. pseudoprotuberans*, Kir., has something in common with this form, but the semi-cells are separated by the narrow linear sinuses between them; *C. inflatum* has an obtuse-angled sinus.

C. (*Euastrum*) *Sendtneranium*, Reinsch. (Figs. 30–31).—I have received a number of good specimens from Minnesota identical with Reinsch's figures and description. In outline it approaches *C. nasutum* (*v.* D. of the U. S., p. 89), but that is a strongly granulated species.

C. Braunii, forma *major*, Reinsch. (Figs. 28–29).—Stillwater, Minnesota.

C. læve, Rab. (Figs. 35 and 36).—I have described this species in Des. U. S., p. 62. Membrane finely granular, which is sometimes the character; *v.* Nord. et. Wittr. Ital. et Tyr. Coll., p. 29. The figures represent a smooth form, in accord with the name and description by Rab. *glabrum et lævissimum.* I received large numbers the past summer from the basin of a fountain in Pottsville, Penn.

Xanthidium fasciculatum (Ehrb.) Ralfs., var. SUBALPINUM, *n. var.* Prof. Delponte, in his Sp. Desmidiacearum Subalpinarum, p. 168, plate 13, describes this species differently from that described in Des. U. S., the variation being mainly in the wider separation of the lateral spines. To distinguish the two I make the above variety.

Not rare in ponds of Minnesota or New Jersey.

X. COLUMBIANUM, *n. sp.*—Cells about one-third longer than wide, divided by a deep constriction, which forms much ampliated acute-angled sinuses; semi-cells oblong-hexagonal, superior and lateral angles each produced into a firm aculeus; within the margin, four, often indistinct aculei; end view more or less regular hexagonal, each angle somewhat produced and surmounted by a firm aculeus; within the margin are four aculei, the ends of which often extend over the margin; cytioderm smooth. Diameter 60μ; length 80μ without aculei.

Ocean Co., New Jersey.

X. TORREYI, *n. sp.*—Small, of nearly equal length and breadth, semi-cell somewhat hexagonal, half as long as wide; superior and lateral angles slightly protruding and surmounted each by a firm, straight, or slightly bent aculeus; end elliptic with one aculeus on, and another within, the margin of each end; on each side, a rounded prominence peculiar to the genus. Lateral view elliptic, with a constriction in the middle; two aculei at each end and two short tips evident near the middle. The inflations or rounded prominences are seen near the juncture of the semi-cells. Diameter 33μ without aculei, and, with them, 65μ; length about 75μ.

Ocean Co., N. J., particularly Horicon Lake. On the green, sloping banks of this beautiful sheet of water is the home of the venerable brother of the late John Torrey of botanical fame, and in happy remembrance of whom this new plant is named.

Euastrum crassum (Bréb) Kg., var. *scrobiculatum*, Lund.—Diameter 70–75μ; length 125–150μ.

Malaga and other places, New Jersey.

E. MAGNIFICUM, *n. sp.*—The largest of our *Euastra*; about twice as long as broad; semi-cell five-lobed, the terminal lobe exserted; neck short, dilated, with end somewhat convex; the basal and intermediate lobes entire, with a deep obtuse notch between; upper margin of the basal lobes nearly horizontal and parallel; no prominent scrobiculæ, but one large central undulate inflation shown in lateral view. End view shows the terminal and intermediate lobes notched at each side. Diameter 100μ; length about 190μ.

Near Malaga and Manchester, N. J.

E. PURUM, *n. sp.*—Small, short; semi-cell three-lobed, broader than long; basal lobe much inflated, terminal lobe short, dilated and notched; in lateral view the base and end are more or less inflated. Diameter 35–45μ; length 55–70μ.

The smaller forms from Florida; the larger from Brown's Mills, New Jersey.

This new species is separated from *E. ansatum*, Ehrb., by the decidedly dilated terminal lobe and more strongly inflated basal lobes.

E. cuneatum, Jenner.—Harvey Lake, Lycoming Co., Penn., and occasionally in New Jersey ponds.

E. pectinatum, Bréb.—Semi-cell 3-lobed, terminal lobe dilated, usually entire; lateral lobes broad, making the basal portion of the semi-cell somewhat quadrilateral, horizontal, and, at each side, emarginate; lateral view cuneate, with two swellings near the base and one at the apex; transverse view oval, with three lobules on each side and one (or imperfectly two) at each end. Diameter 40–50μ; length about 75μ.

Minnesota. Although common in England, I obtained this year the first specimen found in the United States. A number of varieties of this species has been described by specialists in different countries. The present is not Ralf's typical form, but a variety.

Micrasterias apiculata, Menegh.—Harvey Lake, Luzerne Co., Penn., and Stillwater, Minn.

M. SPECIOSA, *n. sp.*—Small, somewhat longer than broad, five-lobed; lateral lobes unequal, the basal lobes usually with only half as many divisions as the intermediate ones; basal lobe bifid, and intermediate lobes twice bifid; the angles of each section drawn out into two spine-like points; terminal lobe rather narrow, linear; end exserted and much dilated, usually with three prominent mucros at each angle, centre retuse and raised, standing free, with a gap between it and the intermediate lobes; a series of small spines often to be observed on the margins of the lobes. Diameter of Florida form 95μ; length 110μ; of New Jersey form, diameter 125–150μ; length 155–165μ.

This species is nearly related to *M. radiosa*, var. *ornata*, Nord., but is smaller; the lobes are not so often and so deeply intersected, and the polar lobe is more exserted and has the end more dilated.

STAURASTRUM CORNUTUM, *n. sp.* (Figs. 3 and 4).—Medium size, about one-fourth longer than wide, smooth; semi-cell oval or broadly elliptic, with a prominent, somewhat inwardly curved aculeus on each side; end view triangular, angles rounded, each with a firm spine, sides straight or slightly concave. Diameter 55–60μ; length about 70μ. Spines not included in these measurements.

The front view resembles that of *Arthrodesmus convergens*, Ralfs, but the triangular end view proves it to be quite distinct.

St. Anthony Park and other localities, Minn.

ST. VESICULATUM, *n. sp.*—Small, smooth, about one-half longer than wide; constriction deep, sinuses acute-angled, much ampliated; semi-cell short, ovate or sub-pyramidal, not so long as broad; base wide, lower angles rounded, sides convex and inclining to the rounded apex; end view triangular, angles rather broadly rounded, sides slightly convex or straight. Diameter 31μ; length 45μ.

Differs from *St. cordatum*, F. Gay, in front view; sinuses are not narrow linear, but much ampliated, thereby giving the cell a more elevated appearance.

Green's Lake, New Jersey.

St. bacillare, Bréb. (Figs. 5 and 6).—Near Minneapolis, Minn. Brébisson describes a form of a French species as *St. globosum* which is somewhat stouter and partially granular, but nearly similar in form; the two have therefore been very properly considered as one by recent botanists.

St. Maamense, Archer (*St. pseudocrenatum*, Lund.) (Figs 9 and 10).—St. Anthony's Park, near Minneapolis, Minn.

As Archer's name antedates Lundell's, it is entitled to stand.

St. erasum, Bréb., forma *espinulosa*, Lund. (Figs. 16 and 17). Green's Lake, New Jersey.

ST. XIPHIDIOPHORUM, *n. sp.* (Figs. 21 and 21).—Small, one-half longer than broad; deeply constricted, sinus narrow, rounded at base and widened irregularly; semi-cell transversely oblong, with lateral margins notched; the end margin drawn out into a sort of one-sided, hastate, poignard-like spines, or slender points, about nine in number; membrane smooth, with several scrobiculæ; end view triangular, angles broadly truncate and usually three-lobed, each lobe with a vertical spine; sides concave. Diameter 25–30μ; length 40μ.

Near Stillwater and Minneapolis, Minn.

When sending me this beautiful and remarkable little *Staurastrum*, Miss Butler called my attention to "*the little gothic structure*," a very appropriate comparison.

ST. MINNEAPOLIENSE, *n. sp.* (Figs. 11–13).—Small, verrucose; semi-cells in front view sub-cuneate, with each of the two opposite superior angles drawn out into a short arm, with sides serrate and apex finely toothed, diverging from the arm of the connected semi-cell; end view, arms straight, body much elevated on each side; side-view, arms straight, body much raised in the centre and crenate on the apex. Diameter, f. v., 50–58μ; thickness of body 20–25 μ.

The front view not unlike other species, but the side and end views quite distinct in the unusual inflation of the body.

ST. CALYXOIDES, *n. sp.* (Figs. 14 and 15).—Nearly equal in length and breadth; smooth or finely punctate; deeply constricted; semi-cells saucer- or calyx-shaped, bearing on the undulate margin five equally distant divergent spines; end view pentagonal, each angle produced and bearing a strong aculeus. Diameter about 33μ, without, and 75μ with, the aculei.

Near Manchester, Ocean Co., and Green's Lake, Warren Co., New Jersey.

St. Minnesotense, *n. sp.* (Figs. 7 and 8).—Large, punctate, spinous, about as long as broad; semi-cells broadly elliptic, twice as wide as long, lateral angles each with two large, straight or incurved spines or aculei, three more pairs of similar spines placed slightly within the margin of the end, one on each side of the semi-cell; six more, often inconspicuous, arranged around the centre; end view triangular, with two spines at each angle, and two pairs near the margin between the angles, one on each side of semi-cell; around the centre are nine more, but often indistinct, spines. Diameter 65–75μ without and 90–100μ with the spines.

Frequent in Minnesota ponds.

St. Wolleanum, Butler. (Figs. 1 and 2). Medium size, membrane punctate, about one-half longer than broad, moderately constricted, sinuses obtuse angles; semi-cell broadly oval or subhexagonal, superior and lateral angles produced into subcylindrical, somewhat swollen processes or arms, slightly notched at the apex; four more similar processes within the margin; end view regular, hexagonal, each angle furnished with an arm as in front view; within the margin, arranged in a circle around the centre, are six more and less conspicuous processes. Diameter of body 40 by 50μ; with arms, 65 by 83μ.

Vicinity of Minneapolis, Minn.

This species was discovered and identified as new by Miss E. Butler, who declines to have the name changed.

New Grasses.

By Geo. Vasey.

Trisetum Ludovicianum.—Culms 2 to 2.5 ft. high, stout, erect, smooth, leafy; lower 3 or 4 leaves near the base 6–10 inches long, the margins and sheaths pubescent; upper leaves (2) larger and with long, striate, smooth sheaths, the upper sheath 9–10 inches long and reaching to the base of the panicle, blade 6–10 inches long, 3–4 lines wide, roughish. Panicle 6–10 inches long and about one inch wide, erect, nodding at the apex, rather loose, the branches semiverticillate, erect, mostly in fives, unequal, the longer ones 2 to 4 inches long and flowering nearly to the base, the rachis and pedicels smooth or nearly so, pedicels about as long as the flowers; spikelets 2- to 3- (mostly 2-) flowered, the lower flower unawned; outer glumes smooth or slightly hispid on the keel, 2.5 to 3.5 lines long, 3-nerved, acute, with broadly scarious margins, the upper obovate, the lower rather shorter and narrower; the flowering-glume of the lower flower 3–3.5 lines long, narrowly lanceolate, nearly smooth, acute or acutish, but not bifid; second flowering-glume 2–2.5 lines long, punctulate scabrous, rather thicker than the lower one, with a rather scarious margin, acuminate, but hardly toothed at the apex, obscurely 3-nerved, dorsal awn from the upper fourth, as long as or longer than its glume, the palets one-third shorter than the glumes, membranaceous, bifid at the apex; rhachilla sparsely pubescent, terminated with a short rudiment, or occasionally with an imperfect flower.

Found along the borders of a cane-field in Louisiana, by Rev. A. B. Langlois. Doubtfully referred to the genus *Ventenata* by Prof.